



HAL
open science

Flagship individuals in biodiversity conservation

Ivan Jarić, Iran C Normande, Ugo Arbieu, Franck Courchamp, Sarah L Crowley, Jonathan M Jeschke, Uri Roll, Kate Sherren, Laura Thomas-Walters, Diogo Veríssimo, et al.

► **To cite this version:**

Ivan Jarić, Iran C Normande, Ugo Arbieu, Franck Courchamp, Sarah L Crowley, et al.. Flagship individuals in biodiversity conservation. *Frontiers in Ecology and the Environment*, In press, 10.1002/fee.2599 . hal-03935818v2

HAL Id: hal-03935818

<https://hal.science/hal-03935818v2>

Submitted on 15 Oct 2023

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

in press in *Frontiers in Ecology and the Environment* (<https://doi.org/10.1002/fee.2599>)

Citation: Jarić, I., Normande, I.C., Arbieu, U., Courchamp, F., Crowley, S.L., Jeschke, J.M., Roll, U., Sherren, K., Thomas-Walters, L., Veríssimo, D. and Ladle, R.J. (2023). Flagship individuals in biodiversity conservation. *Frontiers in Ecology and the Environment* doi:10.1002/fee.2599 (in press)

Flagship individuals in biodiversity conservation

IVAN JARIĆ^{1,2,3*}, IRAN C NORMANDE^{4,5}, UGO ARBIEU^{3,6,7}, FRANCK COURCHAMP³, SARAH L CROWLEY⁸, JONATHAN M JESCHKE^{9,10,11}, URI ROLL¹², KATE SHERREN¹³, LAURA THOMAS-WALTERS¹⁴, DIOGO VERÍSSIMO¹⁵, AND RICHARD J LADLE^{5,16}

¹ Biology Centre of the Czech Academy of Sciences, Institute of Hydrobiology, České Budějovice, Czech Republic

² University of South Bohemia, Faculty of Science, Department of Ecosystem Biology, České Budějovice, Czech Republic

³ Université Paris-Saclay, CNRS, AgroParisTech, Ecologie Systématique Evolution, Orsay, France

⁴ Chico Mendes Institute for Biodiversity Conservation, Lagoa do Jequiá Marine Extractive Reserve, Jequiá da Praia, Brazil

⁵ Institute of Biological and Health Sciences, Federal University of Alagoas, Maceió, Brazil

⁶ Senckenberg Biodiversity and Climate Research Centre, Frankfurt, Germany

⁷ Smithsonian Conservation Biology Institute, National Zoological Park, Front Royal, VA

⁸ Centre for Geography and Environmental Science, University of Exeter, Penryn Campus, Penryn, UK

⁹ Leibniz Institute of Freshwater Ecology and Inland Fisheries, Berlin, Germany

¹⁰ Institute of Biology, Freie Universität Berlin, Berlin, Germany

¹¹ Berlin-Brandenburg Institute of Advanced Biodiversity Research, Berlin, Germany

¹² Mitrani Department of Desert Ecology, The Jacob Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev, Midreshet Ben-Gurion, Israel

¹³ School for Resource and Environmental Studies, Dalhousie University, Halifax, Canada

¹⁴ Biological and Environmental Sciences, University of Stirling, Stirling, UK

¹⁵ Department of Zoology, University of Oxford, Oxford, UK

¹⁶ CIBIO/InBio, Centro de Investigação em Biodiversidade e Recursos Genéticos, Laboratório Associado, Universidade do Porto, Vairão, Portugal

* Correspondence: (ivan.jaric@universite-paris-saclay.fr)

Abstract

Flagship species are an important tool for mobilizing support for conservation. Here, we extend this concept to include individual organisms, whose characteristics, fates, and connections to people can garner public attention, attract conservation support, and spur activism. Flagship individuals typically share a similar suite of characteristics, including (1) species-level traits associated with charisma; (2) individual traits that are unique or distinctive; (3) a high degree of exposure to humans; and (4) a known, noteworthy life history or fate. The interplay between these characteristics and human agency establishes unique connections between flagship individuals and people, and generates widespread media attention. We discuss how the selection and promotion of flagship individuals can inspire empathy and, ultimately, conservation action. Finally, we identify the limitations of the flagship individual approach, while arguing that, if carefully and strategically implemented, it has the potential to produce substantial benefits for conservation policy and practice.

In a nutshell:

- The unique characteristics and life stories of some individual organisms, termed flagship individuals, have enormous potential to mobilize public support for and raise awareness of biodiversity conservation
- Flagship individuals are typically affiliated with idiosyncratic traits (such as charisma), high exposure to humans, and noteworthy life histories or fates
- Such individuals can be used to create unique connections with people, gain leverage and agency (by generating empathy), raise awareness, encourage public engagement and behavioral change, attract funding, and induce changes in policy
- The use of flagship individuals is complementary to the use of flagship species and other related concepts

Introduction

A key challenge for biodiversity conservation is the lack of strong public support and mobilization (Courchamp *et al.* 2018). To cope with ongoing rates of biodiversity loss, conservation practitioners must find effective ways to mobilize support, including through different marketing approaches and strategies (Veríssimo *et al.* 2014). One common strategy in conservation marketing campaigns is the use of flagship species: namely, “species used as foci of broader conservation marketing campaigns, based on their possession of one or more traits that appeal to the target audience” (Veríssimo *et al.* 2011). Flagship species are considered one of the most effective approaches for garnering public support and attracting funding for conservation (Barua *et al.* 2011; McGowan *et al.* 2020).

The flagship species concept has also been expanded to focus on multiple species (“flagship fleets”), as well as landscapes and ecosystems (Veríssimo *et al.* 2014; Lundberg *et al.* 2020; Dobson *et al.* 2021). Here, we argue that this concept can also be especially powerful and effective when applied at the level of individual animals. Selection of particular individuals – what we term “flagship individuals” – as figureheads of conservation marketing, advocacy, or education can not only generate empathy through communicative and psychological mechanisms but also serve as an embodiment or archetype to symbolize a cause (Wald *et al.* 2021). Although the potential of individuals to generate intense public attention, attract conservation support, and spur activism has been previously discussed in the literature (eg Nicholls 2006; Due *et al.* 2014; Carpenter and Konisky 2019), this capacity has not yet been properly recognized and more widely applied in conservation.

Here, we introduce the concept of flagship individuals as a promising approach for biodiversity conservation. We highlight several case studies of flagship individuals and explore their impacts, including improved awareness and education (eg Smokey Bear), changed attitudes and behaviors (eg Tilikum the orca [*Orcinus orca*]), public initiatives (eg Lua the Antillean manatee [*Trichechus manatus manatus*]), fundraising (eg 480 Otis the bear [*Ursus arctos*]) and policy changes (eg Grecia the chestnut-mandibled toucan [*Ramphastos ambiguus swainsonii*]) (WebTables 1–4). We also provide an overview of key characteristics of flagship individuals, guidelines for their selection, notable risks and caveats, and recommendations for conservation practice.

The concept and characteristics of flagship individuals

We define flagship individuals as organisms whose individual traits, species characteristics, exposure to humans, and/or fates serve to engage and motivate people and garner support for broader conservation goals (Figure 1). The concept of the flagship individual corresponds in part with the idea of an identifiable victim (see glossary in WebTable 5) of anthropogenic threats posed to wildlife (Thomas-Walters and Raihani 2017). The flagship individual's main potential lies in people's tendencies to connect more strongly and emotionally to a specific individual than to an abstract group or category, such as a species (Deshpande and Spears 2016).

Flagship individuals commonly share some combination of the following four characteristics (Figure 1): (1) traits associated with species charisma; (2) unique or distinguishing individual traits; (3) high levels of exposure to humans; and (4) known, noteworthy life histories, sets of circumstances, or fates.

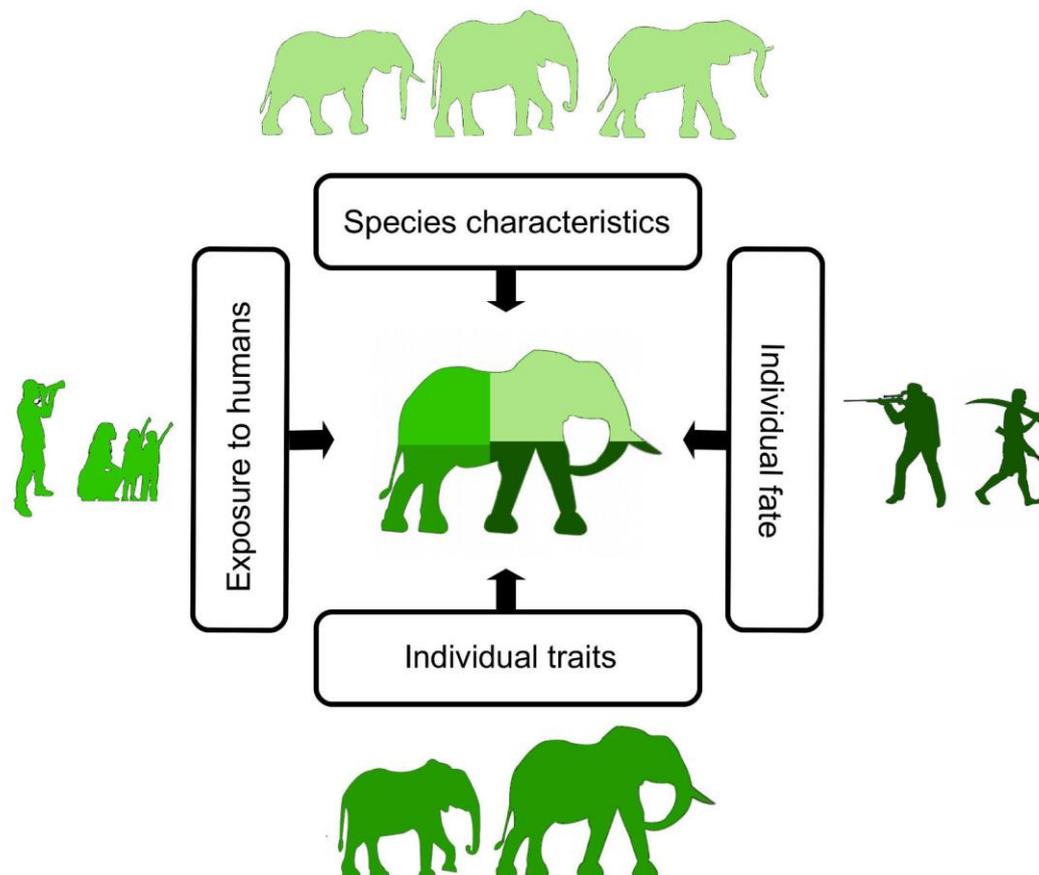


Figure 1. Defining characteristics of flagship individuals, presented through the example of an African elephant (*Loxodonta africana*). A flagship individual (the central composite image with four shades of green) is distinguished by species characteristics, individual traits (here, larger body size and prominent tusks), its level of exposure to humans (tourism), and its individual fate (a victim of poaching).

As they typically belong to charismatic species, flagship individuals therefore exhibit the “charismatic traits” (eg beautiful, impressive, endangered) of their conspecifics (Albert *et*

al. 2018; Courchamp *et al.* 2018). Moreover, individuals with recognized flagship potential (WebTables 1–4) are more often than not large, terrestrial mammals, taxa that were frequently identified as being the “most charismatic” by Albert *et al.* (2018).



Figure 2. Examples of flagship individuals. (a) General Sherman, a giant sequoia (*Sequoiadendron giganteum*) in California, believed to be the world’s largest known living single-stem tree (image credit: J McNair, ©CaliforniaThroughMyLens); (b) Cecil the lion (*Panthera leo*), whose killing by a trophy hunter in Zimbabwe provoked global condemnation (image credit: Daughter#3/Flickr.com [CC BY-SA 2.0]); (c) Keiko, a captive orca (*Orcinus orca*), who starred in the movie *Free Willy* (image credit: author unknown/Wikimedia Commons [public domain]); (d) taxidermied mount of Sam, a female koala (*Phascolarctos cinereus*), who attracted global attention to bushfire impacts in Australia (image credit: B Healley, ©Museums Victoria [CC-BY 4.0]); (e) Sudan, a captive northern white rhinoceros (*Ceratotherium simum cottoni*) and the last known male of the subspecies (image credit: G

Goodwin); and (f) *Grecia*, a chestnut-mandibled toucan (*Ramphastos ambiguus swainsonii*), a victim of abuse who inspired public activism and policy changes (image credit: Rescate Wildlife Rescue Center – Costa Rica). See WebPanel 1 for additional information.

In addition to species characteristics, flagship individuals may also possess unique traits that distinguish them from their conspecifics. For example, they may attain unusual or extreme size (eg General Sherman, a giant sequoia [*Sequoiadendron giganteum*], considered to be the largest living single-stem tree on Earth; Figure 2a) or extreme longevity (eg Wisdom the Laysan albatross [*Phoebastria immutabilis*], the oldest known bird in the world), have more pronounced or unique morphological features, or exhibit uncommon behaviors.

Flagship individuals also tend to have high levels of exposure to humans, for example in protected areas that are popular tourist destinations, or in urban areas (eg Ruthi the striped hyena [*Hyaena hyaena*]; WebTables 1–4). Furthermore, they may have high levels of direct human interaction, for instance as zoo attractions (eg Tilikum, a captive killer whale kept at SeaWorld Orlando) or by having become so habituated to people that they tend to approach them (eg Lua the manatee; Panel 1 and Figure 3). Such visibility can be further enhanced internationally through social media (eg the widespread popularity of Knut, a polar bear [*Ursus maritimus*] formerly at the Berlin Zoo, which led to a global phenomenon labeled “Knutmania”; WebTables 1–4).

Flagship individuals are often brought to prominence by their unusual life history or circumstances, dramatic events, and/or often tragic fate. These events can generate an emotional response, raise awareness of specific conservation issues, and draw public support and direct engagement. For example, the killing of Cecil the lion (*Panthera leo*) by a trophy hunter in Zimbabwe drew global condemnation and directed attention toward the complex conservation issue of trophy hunting (Figure 2b; Carpenter and Konisky 2019). In another case, in Costa Rica, the story of Grecia the toucan, who, after being abused and losing her upper beak, was taken to an animal shelter and fitted with a prosthetic 3D-printed replacement, inspired public activism and policy change (WebTables 1–4). Notably, success stories and positive outcomes can also be effective in attracting and mobilizing public attention.

Individuals who are recognized as the last remaining representatives of their species may also become flagships. They can be either a living or a deceased individual, such as Sudan, the last male northern white rhinoceros (*Ceratotherium simum cottoni*; Fink *et al.* 2020), and Lonesome George, the last known Pinta Island tortoise (*Chelonoidis niger abingdonii*; Nicholls 2006). They can also represent historic representatives of extinct species, such as Benjamin, the last known thylacine (*Thylacinus cynocephalus*), and Martha, the last passenger pigeon (*Ectopistes migratorius*; Avery 2014). However, the fate of a flagship individual can also be uplifting, as was the case for Diego, the Hood Island giant tortoise (*Chelonoidis niger hoodensis*), who played a pivotal role in pulling his species back from the brink of extinction (Cayot 2021).

As is apparent from the examples mentioned above, flagship individuals also require an easily recognizable moniker. Most often such identifiers consist of both the personal name given to the individual and the common name of the species (eg Smokey Bear, Herman the

sturgeon; WebTables 1–4). The assigned name allows flagship individuals to become recognized, be referred to as unique individuals, and be attributed a status not unlike personhood (Levin 2015). Although links between the common name of a species and the success of conservation efforts remain unclear (eg Carvell *et al.* 1998; Gregg *et al.* 2020; Díaz-Restrepo *et al.* 2022), the possession of a name seems to be important for the effectiveness of flagship individuals. For example, Cecil the lion’s popularity has been partly attributed to use of his personal name instead of his research code number (MAGM1) in marketing (Macdonald *et al.* 2016; Carpenter and Konisky 2019). Similarly, it is believed that his personal name was one of the reasons why Diego the tortoise received more media attention than E5, another male conspecific involved in the same captive-breeding program, despite the latter making a greater contribution to the species’ recovery based on the number of offspring produced (Moore 2021).

Panel 1. Lua the Antillean manatee

The Antillean manatee (*Trichechus manatus manatus*) was once widespread, ranging from the southeastern coast of Brazil north through Central America and into the Caribbean. In Brazil, habitat loss and overhunting have severely reduced and fragmented the wild population, restricting extant subpopulations to the northern and northeastern coasts. An ambitious reintroduction program was initiated in 1994, the goal of which was to release rehabilitated orphaned manatee calves into the southernmost subpopulation. The ongoing program is unique within Brazil, and considerable resources have been invested in rehabilitation and post-release monitoring. As of 2015, 30 manatees have been released at three sites, with a high rate of success (75% survival; Normande *et al.* 2015).

The individual manatee eventually given the name Lua (Figure 3) was found stranded in March 1991 in Morro Branco, in northeastern Brazil. Her stranding coincided with the initiation of the manatee reintroduction program, and she was one of the first rescued calves to enter rehabilitation. In 1994, Lua and another named manatee (Astro) were the first to be released in the wild. Lua quickly became the symbol of the reintroduction program, being used in local media and community activities to gain public attention. Underwater photographers took advantage of her docile nature to capture iconic pictures used in national campaigns to raise awareness for the manatee reintroduction program.

Because of her docility and willingness to approach humans and boats, Lua was for many people their first direct contact with a wild manatee. Her habituation to humans greatly facilitated the creation of a local sustainable tourism industry that currently supports up to 400 families in the communities of Porto de Pedras and Barra de Mamanguape (Normande *et al.* 2015, 2016). However, Lua’s tameness has also brought challenges, including health concerns (some visitors offer her food and water and, occasionally, even beer and fried fish). Such interactions could reduce the amount of time she spends foraging, resting, or mating.

(Panel 1 continued)

Nonetheless, Lua was the first released manatee to successfully breed in the wild (Lima *et al.* 2005) and has had six calves (almost half of all reported calves from released mothers), contributing to the area's repopulation and increasing connectivity between subpopulations.

At the time of writing, Lua is a middle-aged (a 31 year-old) manatee of around 3.1 m length and 640 kg weight. Her body size and unique features, including an “algae mask” on her face, make her easily recognizable and facilitate tracking, and due to her friendly disposition toward humans she remains one of the most important conservation assets on the northeastern coast of Brazil.



Figure 3. *Lua the Antillean manatee (Trichechus manatus manatus; image credit: L Candisani).*

Flagship individuals can also be objects of research, such as tagged and tracked individuals, which are often used for conservation communication and outreach (eg tracked great white sharks [*Carcharodon carcharias*], such as Mary Lee; WebTables 1–4). Moreover, they can represent a succession of individuals, where a new individual assumes the identity held by the previous individual after their death (eg Sir Nils Olav, a king penguin [*Aptenodytes patagonicus*] at the Edinburgh Zoo, is in fact in his third incarnation). Flagship individuals are sometimes also promoted as a group of individuals, as was the case with the Magnificent Seven tuskers (Dzombo, João, Kambaku, Mafunyane, Ndlulamithi, Shawu, and Shingwedzi), African elephant bulls (*Loxodonta africana*) used to promote conservation work in South Africa's Kruger National Park (WebTables 1–4): an approach analogous to the concept of flagship fleets (Veríssimo *et al.* 2014).

A particular subgroup of flagship individuals are fictional characters, such as those from animated movies (eg Nemo from *Finding Nemo*, Blu from *Rio*; De Matos 2019), public campaigns (eg Smokey Bear, also personified by a rescued American black bear [*Ursus americanus*] cub kept in the National Zoo in Washington, DC), and movie/television characters played by animal actors (eg Flipper the bottlenose dolphin [*Tursiops truncatus*], Skippy the eastern gray kangaroo [*Macropus giganteus*]). Fictional flagship individuals offer opportunities for conservation organizations to collaborate with the producers of digital visual media to further their objectives (Dorward *et al.* 2017; Silk *et al.* 2018). They may even be linked with the concept of a virtual influencer, an increasingly popular marketing tool (eg Eric the pangolin; Veríssimo 2021).

Drivers of a flagship individual's effects

Flagship individuals have the potential to gain leverage where other flagship types may be less effective through psychological (inspiring empathy) and communicative (storytelling) pathways. Empathy may be generated and strengthened via processes of personification and anthropomorphism, which help people to better relate to an individual animal and reduce perceptions of distance between humans and nonhumans (Kusmanoff *et al.* 2020; Wald *et al.* 2021). Empathy can be further strengthened through negative emotional responses such as anger, driven by events perceived as morally wrong (Levin 2015; Macdonald *et al.* 2016; Boissat *et al.* 2021).

Different storytelling techniques by news media and organizations involved in conservation marketing, advocacy, or education can substantially affect the promotion and effectiveness of flagship individuals. These include personalized narratives focused on individuals rather than groups (Wald *et al.* 2021), which are often featured in natural history documentaries (Boissat *et al.* 2021). Traditional and social media play important roles in selecting, covering, and promoting flagship individuals, often with their own agendas and rules for choosing and framing stories (Harcup and O'Neill 2017; Arbieu *et al.* 2021). In particular, stories that involve celebrities (such as named individuals) or criteria that match those of flagship individuals (such as elements of surprise, bad news, and relevance for the target audience) are generally more likely to be selected and spread by the media (Harcup and O'Neill 2017). Zoos regularly personify captive animals in their displays (Levin 2015), which may drive establishment of a flagship individual. For example, captive individuals are typically named, receive frequent media coverage, and occasionally even have their own webcams, blogs, and social media pages through which they “communicate” with the public (Levin 2015).

The salience or appeal of a flagship individual can vary spatially and temporally, and is affected by various sociocultural factors. For example, the death of Sudan, the last male northern white rhinoceros, primarily attracted media and public attention and provoked emotional responses in Western countries, far outside the natural range of the subspecies (Fink *et al.* 2020).

Effects of flagship individuals

Flagship individuals not only garner support for conservation of their own species but also often have positive impacts on broader conservation challenges (eg Sam the koala [*Phascolarctos cinereus*], who helped raise awareness about both threats to koalas and the larger impacts of bushfires; Figure 2d; Due *et al.* 2014). Flagship individuals can generate focusing events (Carpenter and Konisky 2019; Jarić *et al.* 2023) and may even catalyze conservation movements (Boissat *et al.* 2021). Besides being used to raise public awareness of and funds to address conservation problems and initiatives, they can also lead to attitudinal shifts, behavioral changes, and policy development (Panel 1; WebTables 1–4). Their wide reach can be used to attract new audiences, and provide common focal points and advocacy goals for both conservation and animal protection activists (Carpenter and Konisky 2019). However, data for evaluating the scale of contributions of flagship individuals to conservation are lacking, which stems from the overall dearth of data on the impact of conservation efforts generally.

Emergence, selection, and use of flagship individuals

Flagship individuals typically rise to prominence either suddenly, through a focusing event (eg Cecil the lion, Grecia the toucan; WebTables 1–4), or gradually, through continuous interactions with people (eg Lua the manatee; Panel 1). Media often play a key role in driving a focusing event. Following the initial surge of attention, the flagship status of an individual will emerge once it is selected and promoted by conservation-oriented individuals or organizations. Such actors play an essential role in communicating the relevance of the individual story or fate beyond the immediate context, to create circumstances in which broader societal awareness and flagship status coincide, and together pave the way toward concrete conservation actions. While predicting focusing events is very challenging, practitioners can maximize effectiveness through timely and carefully targeted conservation marketing strategies, interventions, education campaigns, and advocacy (Lundberg *et al.* 2020; Jarić *et al.* 2023).

Flagship individuals can also be selected, promoted, and used without having been previously popular or publicly known. This is common for individuals featured in scientific or conservation projects, such as individuals that have been reintroduced or that are being remotely tracked. For example, Mary Lee the great white shark was selected and used for a campaign to promote research on animal tracking, in the process becoming one of the most famous individual sharks worldwide (WebTables 1–4).

Flagship individuals should be selected and promoted based on the target audience and intended goal of the campaign (Barua *et al.* 2011; Veríssimo *et al.* 2011; Dobson *et al.* 2021). For instance, individuals of globally recognizable species may be better suited to international fundraising efforts, whereas individuals of species that are primarily recognizable only within their native range may be more suitable for local or regional efforts. Societal preferences can vary both among and within different flagship types, which allows maximization of their effectiveness through the development of carefully targeted marketing strategies that may include different types of flagships, and that are tailored for specific target groups (Lundberg *et al.* 2020). Flagship individuals have great potential for inclusion in such

outreach efforts and, when combined with other flagship types, for deployment in a wide range of contexts. Their selection process could follow a similar framework to that proposed for flagship species by Veríssimo *et al.* (2011), as well as the set of selection criteria established by Barua *et al.* (2011), while taking into account specific characteristics of flagship individuals (Figure 1). According to the Veríssimo *et al.* (2011) framework, those seeking to use flagship individuals in a conservation campaign must first identify and understand the conservation issue and the target audience, as well as the relationship between the two. Such knowledge should influence the selection of a flagship individual, while also considering its societal and ecological characteristics and intended uses (Barua *et al.* 2011). Finally, a marketing, advocacy, or education strategy involving a selected flagship individual should be developed and implemented, followed by an evaluation of campaign success (Veríssimo *et al.* 2011). Evaluation of the effectiveness of flagship individuals should be conducted using evidence-based methods, such as brand awareness (Veríssimo *et al.* 2014), counterfactual approaches (Veríssimo *et al.* 2020), and coalition models (Boissat *et al.* 2021).

Caveats and challenges

Although the concept of the flagship individual can be an effective tool for conservation marketing, several caveats and challenges must be acknowledged and addressed. Some of these are inherent to the use of individuals in conservation campaigns, whereas others are mainly associated with their improper use. Ultimately, the concept we present here requires further research, including testing the relative effectiveness of different flagship types through experimental designs that explore the societal impacts of individual-versus species-focused conservation marketing, advocacy, and education campaigns. Moreover, a thorough assessment of the importance and relative frequency of the four characteristics thought to be common to flagship individuals has yet to be performed.

Flagship individuals are inherently more fleeting than other flagship types, and they will ultimately cease to perform their flagship role. This may be due to the death or disappearance of the individual or the loss of the key structures that generated and maintained its appeal – for example, the cessation of an animal tracking program, the individual’s release from captivity, its translocation, or simply diminishing media interest. This can lead to negative eventual outcomes, such as a reduction of public support or a rise of conservation pessimism and apathy. The effects of these challenges might be mitigated by shifting focus onto another individual, by using “fleets” of individual flagships, or by developing fictional flagship characters. In certain cases involving rare or highly threatened populations or species, such as the kākāpō (*Strigops habroptilus*) in New Zealand, all remaining individuals known have been assigned names, which facilitates switching between individuals in the campaign or their use as flagship fleets.

Focusing events generated by flagship individuals are also inherently transient (Jarić *et al.* 2023). Therefore, it is critical that conservation marketing, advocacy, or education strategies be adapted to anticipate their occurrence so as to maximize effectiveness, mitigate the effects of attention decay, and ensure that flagship individuals are used to drive long-term attention and effects.

Improper use of flagship individuals through the spread of misleading,

oversimplified, or sensationalized information may distort reality; provide a false characterization of the individual, species, or conservation issue; and ultimately undermine conservation efforts (Somerville *et al.* 2021). This also includes exaggerated anthropomorphism and promotion of certain stereotypes, which are further associated with the tendency of the media to sensationalize conservation issues (Bradshaw *et al.* 2007).

Flagship individuals often appeal to people concerned with animal welfare, which may be a challenge when the priorities of animal welfare and conservation organizations do not align (Hayward *et al.* 2019). Flagship individuals could also be negatively perceived within the species range due, for instance, to human conflicts over wildlife management (Jepson *et al.* 2011). There is also concern that some applications of the concept, such as the use of captive or fictional flagship individuals, may provide a false sense of the presence and stability of a threatened species, or even of one already extinct in the wild (Courchamp *et al.* 2018). Furthermore, the popularity of a flagship individual can potentially harm the species overall if it leads to unsustainable tourism or greater inclusion in the pet trade, as well raising important ethical concerns. Bringing an individual into the spotlight can lead to unintended consequences, such as increased disturbance, undesirable interactions with people (Newsome and Rodger 2008), or risks to public safety. For example, Freya the walrus (*Odobenus rosmarus*), who visited harbors in several northern European countries, attracted increasingly large crowds as her popularity grew, which ultimately led to the decision to euthanize her due to concerns for human safety (Nikel 2022). Further work is needed to understand how flagship individuals can be most effectively employed at minimal risk both to the animal and to people.

Conclusions

Our primary objectives here were to present the concept of the flagship individual, raise awareness on its potential for conservation action, and discuss challenges associated with its implementation. This concept has great potential for biodiversity conservation, by enhancing public support (eg Lua the manatee), education (eg Smokey Bear), fundraising (eg 480 Otis the bear), and policy-making outcomes (eg Grecia the toucan). The use of flagship individuals is complementary to the use of flagship species and other related concepts, and diversifying the flagship concept may generate wider support for conservation and attract new audiences (Veríssimo *et al.* 2014; Lundberg *et al.* 2020; Dobson *et al.* 2021). Despite some challenges, if properly implemented the flagship individual approach could produce substantial benefits for conservation from global to local scales.

Acknowledgements

We thank G Goodwin, J McNair, CaliforniaThroughMyLens.com, A Van Esch, and the Rescate Wildlife Rescue Center (Costa Rica) for providing photographs. This work was supported by a JE Purkyně Fellowship of the Czech Academy of Sciences (IJ); the AXA Research Fund and the 2017–2018 Belmont Forum and BiodivERsA joint call for research proposals, under the BiodivScen ERA-Net COFUND program (FC); the German–Israeli Foundation for Scientific Research and Development (I-2519-119.4/2019) (UR); the Oxford Martin School’s Oxford Martin Programme for the Illegal Wildlife Trade (DV); and the EU

Horizon 2020 Research and Innovation program (854248) (RJL).

Data Availability Statement

No original data were collected for this study.

References

- Albert C, Luque GM, and Courchamp F. 2018. The twenty most charismatic species. *PLoS ONE* **13**: e0199149.
- Arbieu U, Chapron G, Astaras C, *et al.* 2021. News selection and framing: the media as a stakeholder in human–carnivore coexistence. *Environ Res Lett* **16**: 064075.
- Avery M. 2014. A message from Martha: the extinction of the passenger pigeon and its relevance today. London, UK: A&C Black.
- Barua M, Root-Bernstein M, Ladle RJ, *et al.* 2011. Defining flagship uses is critical for flagship selection: a critique of the IUCN climate change flagship fleet. *Ambio* **40**: 431–35.
- Boissat L, Thomas-Walters L, and Veríssimo D. 2021. Nature documentaries as catalysts for change: mapping out the “Blackfish effect”. *People and Nature* **3**: 1179–92.
- Bradshaw CJA, Brook BW, and McMahon CR. 2007. Dangers of sensationalizing conservation biology. *Conserv Biol* **21**: 570–71.
- Carpenter S and Konisky DM. 2019. The killing of Cecil the lion as an impetus for policy change. *Oryx* **53**: 698–706.
- Carvell C, Inglis NF, Mace GM, *et al.* 1998. How Diana climbed the ratings at the zoo. *Nature* **395**: 213.
- Cayot LJ. 2021. Española Island: from near extinction to recovery. In: Gibbs JP, Cayot LJ, and Tapia Aguilera W (Eds). Galapagos giant tortoises. Cambridge, MA: Academic Press.
- Courchamp F, Jarić I, Albert C, *et al.* 2018. The paradoxical extinction of the most charismatic animals. *PLoS Biol* **16**: e2003997.
- De Matos RMF. 2019. A ética ambiental nos filmes de animação: reflexões sobre “Rio” e “Rio 2”. *Revista Livre de Cinema* **6**: 122–35.
- Deshpande A and Spears D. 2016. Who is the identifiable victim? Caste and charitable giving in modern India. *Econ Dev Cult Change* **64**: 299–321.
- Díaz-Restrepo A, Balcombe K, Fraser I, *et al.* 2022. Testing branding techniques on species common names to improve their fundraising profile for conservation. *Anim Conserv* **25**: 27–37.
- Dobson F, Fraser I, and Smith RJ. 2021. Identifying the characteristics of conservation areas that appeal to potential flagship campaign donors. *Oryx* **56**: 555–63.
- Dorward LJ, Mittermeier JC, Sandbrook C, *et al.* 2017. Pokémon Go: benefits, costs, and lessons for the conservation movement. *Conserv Lett* **10**: 160–65.
- Due C, Thompson K, and Every D. 2014. “An image of hope in a week of despair”: representations of Sam the koala in the Australian mainstream news media. *Media Int Aust* **151**: 47–55.
- Fink C, Hausmann A, and Di Minin E. 2020. Online sentiment towards iconic species. *Biol Conserv* **241**: 108289.

- Gregg EA, Bekessy SA, Martin JK, *et al.* 2020. Many IUCN Red List species have names that evoke negative emotions. *Hum Dimens Wildl* **25**: 468–77.
- Harcup T and O’Neill D. 2017. What is news? News values revisited (again). *Journalism Stud* **18**: 1470–88.
- Hayward MW, Callen A, Allen BL, *et al.* 2019. Deconstructing compassionate conservation. *Conserv Biol* **33**: 760–68.
- Jarić I, Correia RA, Bonaiuto M, *et al.* 2023. Transience of public attention in conservation science. *Front Ecol Environ* **21**: 333–40.
- Jepson P, Barua M, Ladle RJ, *et al.* 2011. Towards an intradisciplinary bio-geography: a response to Lorimer’s “lively biogeographies” of Asian elephant conservation. *T I Brit Geogr* **36**: 170–74.
- Kusmanoff AM, Fidler F, Gordon A, *et al.* 2020. Five lessons to guide more effective biodiversity conservation message framing. *Conserv Biol* **34**: 1131–41.
- Levin A. 2015. Zoo animals as specimens, zoo animals as friends: the life and death of Marius the giraffe. *Environ Philos* **12**: 21–44.
- Lima RP, Alvite CM, Vergara-Parente JE, *et al.* 2005. Reproductive behavior in a captive-released manatee (*Trichechus manatus manatus*) along the northeastern coast of Brazil and the life history of her first calf born in the wild. *Aquat Mamm* **31**: 420–26.
- Lundberg P, Veríssimo D, Vainio A, *et al.* 2020. Preferences for different flagship types in fundraising for nature conservation. *Biol Conserv* **250**: 108738.
- Macdonald DW, Jacobsen KS, Burnham D, *et al.* 2016. Cecil: a moment or a movement? Analysis of media coverage of the death of a lion, *Panthera leo*. *Animals* **6**: 26.
- McGowan J, Beaumont LJ, Smith RJ, *et al.* 2020. Conservation prioritization can resolve the flagship species conundrum. *Nat Commun* **11**: 994.
- Moore R. 2021. Galápagos: an encyclopedia of geography, history, and culture. Santa Barbara, CA: ABC-Clio.
- Newsome D and Rodger K. 2008. To feed or not to feed: a contentious issue in wildlife tourism. In: Lunney D, Munn A, and Meikle W (Eds). *Too close for comfort: contentious issues in human–wildlife encounters*. Mosman, Australia: Royal Zoological Society of New South Wales.
- Nicholls H. 2006. Lonesome George: the life and loves of a conservation icon. New York, NY: Macmillan Science.
- Nikel D. 2022. Norway authorities kill Freya the walrus. *Life in Norway*. www.lifeinnorway.net/norway-authorities-kill-freya-the-walrus. Viewed 15 Dec 2022.
- Normande IC, Luna FDO, Malhado ACM, *et al.* 2015. Eighteen years of Antillean manatee *Trichechus manatus manatus* releases in Brazil: lessons learnt. *Oryx* **49**: 338–44.
- Normande IC, Malhado ACM, Reid J, *et al.* 2016. Post-release monitoring of Antillean manatees: an assessment of the Brazilian rehabilitation and release programme. *Anim Conserv* **19**: 235–46.
- Silk MJ, Crowley SL, Woodhead AJ, *et al.* 2018. Considering connections between Hollywood and biodiversity conservation. *Conserv Biol* **32**: 597–606.
- Somerville K, Dickman A, Johnson PJ, *et al.* 2021. Soap operas will not wash for wildlife. *People and Nature* **3**: 1160–65.

- Thomas-Walters L and Raihani NJ. 2017. Supporting conservation: the roles of flagship species and identifiable victims. *Conserv Lett* **10**: 581–87.
- Veríssimo D. 2021. Trends in digital marketing for biodiversity conservation. *Revista CEA* **7**: e1957.
- Veríssimo D, Anderson S, and Tlusty M. 2020. Did the movie *Finding Dory* increase demand for blue tang fish? *Ambio* **49**: 903–11.
- Veríssimo D, MacMillan DC, and Smith RJ. 2011. Toward a systematic approach for identifying conservation flagships. *Conserv Lett* **4**: 1–8.
- Veríssimo D, Fraser I, Girão W, *et al.* 2014. Evaluating conservation flagships and flagship fleets. *Conserv Lett* **7**: 263–70.
- Wald DM, Johnston EW, Wellman N, *et al.* 2021. How does personalization in news stories influence intentions to help with drought? Assessing the influence of state empathy and its antecedents. *Front Commun* **5**: 588978.

I Jarić *et al.* – Supporting Information

WebPanel 1. Extended information for Figure 2: examples of flagship individuals

(a) General Sherman, a giant sequoia (*Sequoiadendron giganteum*), is the world's largest known living single-stem tree (2500 m³ volume) and among the oldest (2300–2700 years) trees in the world, and is a key tourist attraction of Sequoia National Park in California. Image credit: J McNair, ©CaliforniaThroughMyLens. (b) Cecil the lion, a male African lion (*Panthera leo*), was a famous tourist attraction in Zimbabwe's Hwange National Park, whose killing by a trophy hunter drew global condemnation and brought attention to the issue of trophy hunting (Carpenter and Konisky 2019). Image credit: Daughter#3/Flickr.com (CC BY-SA 2.0). (c) Keiko, a captive orca (*Orcinus orca*) and star of the 1993 movie *Free Willy*, has been credited with driving substantial change in public perception and popularity of the species, and was relevant both as a fictional flagship individual and in his own right (Silk *et al.* 2018). Image credit: author unknown/Wikimedia Commons (public domain). (d) Sam, a female koala (*Phascolarctos cinereus*) who attracted global attention to the impact of bushfires to biodiversity following a video of her rescue by a firefighter during the Black Saturday bushfires in Australia (Due *et al.* 2014). Image credit: B Healley, ©Museums Victoria (CC-BY 4.0). (e) Sudan, a captive northern white rhinoceros (*Ceratotherium cimum cottoni*) who, at the time of his death, was one of the last three living individuals and the last known male of the species. He attracted considerable attention and support for the plight of rhinoceros species (Fink *et al.* 2020). Image credit: Georgina Goodwin. (f) Grecia, a chestnut-mandibled toucan (*Ramphastos ambiguus swainsonii*) in Costa Rica, after being abused and losing its upper beak, was fitted with a prosthetic 3D-printed replacement. Grecia inspired public activism and a national movement on animal rights, which resulted in policy changes. Image credit: Rescate Wildlife Rescue Center.

References:

- Carpenter S and Konisky DM. 2019. The killing of Cecil the lion as an impetus for policy change. *Oryx* **53**: 698–706.
- Due C, Thompson K, and Every D. 2014. “An image of hope in a week of despair”: representations of Sam the koala in the Australian mainstream news media. *Media Int Aust* **151**: 47–55.
- Fink C, Hausmann A, and Di Minin E. 2020. Online sentiment towards iconic species. *Biol Conserv* **241**: 108289.
- Silk MJ, Crowley SL, Woodhead AJ, *et al.* 2018. Considering connections between Hollywood and biodiversity conservation. *Conserv Biol* **32**: 597–606.

I Jarić *et al.* – Supporting Information

WebTable 1. Reported and potential examples of flagship individuals

	Name	Species		Group	Habitat	Country	Continent	Status
		Common name	Scientific name					
1	480 Otis	Brown bear	<i>Ursus arctos</i>	Mammal	Terrestrial	US	North America	Wild
2	Alex	Gray parrot	<i>Psittacus erithacus</i>	Bird	Terrestrial	US	North America	Captive
3	Bill and Lynn	North American beaver	<i>Castor canadensis</i>	Mammal	Semiaquatic	US	North America	Wild
4	Benjamin	Thylacine	<i>Thylacinus cynocephalus</i>	Mammal	Terrestrial	Australia	Australia	Captive
5	Bert	Moose	<i>Alces alces</i>	Mammal	Terrestrial	Germany	Europe	Wild
6	Bruno (JJ1)	Brown bear	<i>Ursus arctos</i>	Mammal	Terrestrial	Germany	Europe	Wild
7	Cecil	African lion	<i>Panthera leo</i>	Mammal	Terrestrial	Zimbabwe	Africa	Wild
8	Chi Chi	Giant panda	<i>Ailuropoda melanoleuca</i>	Mammal	Terrestrial	UK	Europe	Captive
9	David Greybeard	Eastern chimpanzee	<i>Pan troglodytes schweinfurthii</i>	Mammal	Terrestrial	Tanzania	Africa	Wild
10	Dicke Marie	European oak	<i>Quercus robur</i>	Plant	Terrestrial	Germany	Europe	Wild
11	Diego	Hood Island giant tortoise	<i>Chelonoidis niger hoodensis</i>	Reptile	Terrestrial	Ecuador	South America	Wild/captive
12	Elsa	Lion	<i>P leo</i>	Mammal	Terrestrial	Kenya	Africa	Wild/captive
13	Fernanda	Fernandina Island Galápagos tortoise	<i>Chelonoidis niger phantasticus</i>	Reptile	Terrestrial	Ecuador	South America	Wild/captive
14	Flipper	Common bottlenose dolphin	<i>Tursiops truncatus</i>	Mammal	Aquatic	US	North America	Fictional/captive
15	General Sherman	Giant sequoia	<i>Sequoiadendron giganteum</i>	Plant	Terrestrial	US	North America	Wild
16	Grecia	Chestnut-mandibled toucan	<i>Ramphastos ambiguus swainsonii</i>	Bird	Terrestrial	Costa Rica	North America	Wild/captive
17	Grizzly 399	Grizzly bear	<i>Ursus arctos horribilis</i>	Mammal	Terrestrial	US	North America	Wild
18	Guy	Western lowland gorilla	<i>Gorilla gorilla gorilla</i>	Mammal	Terrestrial	UK	Europe	Captive
19	Herman	White sturgeon	<i>Acipenser transmontanus</i>	Fish	Aquatic	US	North America	Captive

20	Herschel	California sea lion	<i>Zalophus californianus</i>	Mammal	Aquatic	US	North America	Wild
21	Ivy and Brumas	Polar bear	<i>Ursus maritimus</i>	Mammal	Terrestrial	UK	Europe	Captive
22	Jumbo	African bush elephant	<i>Loxodonta africana</i>	Mammal	Terrestrial	UK/US	Europe/North America	Captive
23	Keiko	Orca	<i>Orcinus orca</i>	Mammal	Aquatic	Iceland	Europe	Wild/captive/fictional
24	Knut	Polar bear	<i>Ursus maritimus</i>	Mammal	Terrestrial	Germany	Europe	Captive
25	Koko	Western lowland gorilla	<i>G gorilla gorilla</i>	Mammal	Terrestrial	US	North America	Captive
26	Lonesome George	Pinta Island tortoise	<i>Chelonoidis niger abingdonii</i>	Reptile	Terrestrial	Ecuador	South America	Wild/captive
27	Lua	Antillean manatee	<i>Trichechus manatus manatus</i>	Mammal	Aquatic	Brazil	South America	Wild
28	Magnificent Seven tuskers	African bush elephant	<i>L africana</i>	Mammal	Terrestrial	South Africa	Africa	Wild
29	Martha	Passenger pigeon	<i>Ectopistes migratorius</i>	Bird	Terrestrial	US	North America	Captive
30	Mary Lee	Great white shark	<i>Carcharodon carcharias</i>	Fish	Aquatic	US	North America	Wild
31	Ndakasi	Mountain gorilla	<i>Gorilla beringei beringei</i>	Mammal	Terrestrial	DR Congo	Africa	Captive
32	Ruthi	Striped hyena	<i>Hyaena hyaena</i>	Mammal	Terrestrial	Israel	Asia	Wild
33	Sam	Koala	<i>Phascolarctos cinereus</i>	Mammal	Terrestrial	Australia	Australia	Wild
34	Sir Nils Olav	King penguin	<i>Aptenodytes patagonicus</i>	Bird	Aquatic	UK	Europe	Captive
35	Smokey Bear	Black bear	<i>Ursus americanus</i>	Mammal	Terrestrial	US	North America	Fictional/captive
36	Sudan	Northern white rhinoceros	<i>Ceratotherium cimum cottoni</i>	Mammal	Terrestrial	Czechia/ Kenya	Europe/Africa	Captive
37	Tilikum	Orca	<i>O orca</i>	Mammal	Aquatic	US	North America	Captive
38	Wally	Bearded vulture	<i>Gypaetus barbatus</i>	Bird	Terrestrial	Germany	Europe	Wild/captive
39	Winter	Common bottlenose dolphin	<i>T truncatus</i>	Mammal	Aquatic	US	North America	Captive
40	Wisdom	Laysan albatross	<i>Phoebastria immutabilis</i>	Bird	Semiaquatic	US	North America	Wild

Notes: the dataset represents a selection of 40 examples that span different species groups, regions, and charisma effects, identified by literature search and expert suggestions.

I Jarić *et al.* - Supporting Information

WebTable 2. Descriptions of the reported and potential flagship individuals presented in WebTable 1

Name	Description
1 480 Otis	A male brown bear, 480 Otis was the 2021 winner of the Fat Bear Competition, a tradition introduced by the Katmai National Park and Preserve in Alaska as a way to highlight the natural beauty of the protected area, the health of the ecosystem, and bear conservation. The Competition is focused on the summer accumulation of fat reserves of the bears, which allows them to survive winter dormancy. All individuals participating in the ongoing contest attract a considerable amount of attention from the public and media. Otis is also a subject of a fundraising campaign (Otis fund), which is used to support research and conservation activities (https://katmaiconservancy.org/pages/fat-bear-week-2022).
2 Alex	Alex was the subject of a ~30-year experiment by animal psychologist researcher Irene Pepperberg, who bought him at a pet shop at the age of two; Alex was 31 years old when he died in 2007. Pepperberg’s work with him over that period made it clear that birds, and particularly parrots, can be very intelligent. The goal of the Alex Foundation is to “support research that will expand such knowledge, and to use these findings to encourage responsible ownership of parrots, their conservation and preservation in the wild, and veterinary research into their psychological diseases and care, thereby improving the lives of all parrots worldwide” (https://alexfoundation.org).
3 Bill and Lynn	A mated pair of beavers in a riparian area of Pennsylvania, Bill and Lynn were promoted as flagship individuals for the recolonization of the area by beavers, and to reduce conflicts with, and increase acceptance of beavers by, local landowners.
4 Benjamin	Benjamin, the last known thylacine, died from exposure at the Beaumaris Zoo in Hobart, Australia. His death, and therefore the extinction of his species, led to the creation of the Remembrance Day of Lost Species (www.lostspeciesday.org), which is held each year on November 30, the date of Benjamin’s death. He is also featured in a famous video clip that has been viewed countless times on the Internet.

5	Bert	Moose were historically present in Germany but were extirpated and are only now slowly returning to the country, mainly from Poland. Bert is one of the very few moose currently in Germany, and he is particularly popular in the state of Brandenburg, where he has been living since 2018 and where he is regularly in the news. In addition to being one of the first moose to return to Germany, his second charismatic characteristic is an unusual behavior – his tendency to socialize with cattle – that also makes it easier to observe him than other moose.
6	Bruno (JJ1)	Brown bears became extinct in Germany in the 19th century (the last one was shot in 1835 in Ruhpolding, Bavaria), but in 2006 the bear Bruno (aka “JJ1”) entered Bavaria from Italy via Austria, becoming the first brown bear known in Germany for more than 170 years. His killing of livestock and pets caused conflict with some humans, and he was eventually shot just a few weeks after he was first observed in Germany. Since 2008, his stuffed body has been on display at the Museum of Man and Nature in Munich. His fate attracted considerable media attention and was widely perceived as a tragic example of human–wildlife conflict, which led to development of a management plan for brown bears in Bavaria.
7	Cecil	Cecil the lion was a well-known tourist attraction in Zimbabwe’s Hwange National Park whose killing by a trophy hunter drew global condemnation, brought attention to the issue of trophy hunting, and attracted conservation funding.
8	Chi Chi	A captive female giant panda in the London Zoo, Chi Chi was one of the best-known pandas in the world and was the inspiration for the familiar panda logo of the conservation organization WWF International, making her likeness one of the enduring symbols of conservation.
9	David Greybeard	A chimpanzee at Tanzania’s Gombe National Park, David Greybeard was part of the Kasekela chimpanzee community studied by scientist Jane Goodall in her groundbreaking research on the emotions and personalities of, communication among, and use of tools by animals. Goodall’s work brought increased awareness of great apes, and the need for their protection and protection of their habitats.
10	Dicke Marie	At an estimated age of 500–600 years, this oak tree is believed to be Berlin’s oldest tree and one of Germany’s few national heritage trees. It has been photographed countless times, including for use in postcards, and is also well known through the writings of the famous naturalist Alexander von Humboldt and his brother Wilhelm, who gave the tree its name.

11	Diego	A male tortoise captured in the wild and kept in zoos, Diego was included in a captive breeding program in an effort to save the nearly extinct subspecies, eventually fathering more than 900 offspring who were released on Española Island, in the Galápagos. Highly popularized by the media, Diego raised awareness of the breeding and reintroduction program, and of conservation efforts throughout the Galápagos Islands.
12	Elsa	A female African lion orphaned as a cub, Elsa was raised by game wardens and eventually released into the wild. Her life inspired several books and movies, attracted global attention, and influenced both public perceptions and attitudes toward lions and their conservation, and of African wildlife in general.
13	Fernanda	Believed to be the last Fernandina Island (Galápagos) tortoise, a subspecies presumed to be extinct prior to her discovery in 2019, Fernanda's status was confirmed by genetic analysis in 2021.
14	Flipper	A fictional character portrayed by animal actors, Flipper inspired many people to protect cetaceans; was a popular character in several eponymous movies and television series; and represents a fictional flagship individual that contributed to the popularity of dolphins.
15	General Sherman	A sequoia, General Sherman is the world's largest known living single-stem tree (2500 m ³ volume) and one of the oldest (2300–2700 years), and is a key tourist attraction of Sequoia National Park in California. The tree raises the profile of and interest in the Park, and attracts both tourists and funding.
16	Grecia	A female chestnut-mandibled toucan born in the wild, in Grecia, a canton of Costa Rica. Grecia was abused and lost her upper beak, which was replaced with a prosthetic three-dimensional printed beak. Her story inspired public activism and a national movement on animal rights, which resulted in policy changes in the country.
17	Grizzly 399	A female grizzly bear residing in Wyoming's Grand Teton National Park and Bridger-Teton National Forest. She attracts an enormous amount of attention and boosts tourist visits to the area, and is considered the most famous bear in the Greater Yellowstone Ecosystem. She was collared and tracked by scientists, who named her. Due to the constant proximity of tourists, she has become partially habituated to humans and is often found near roads, which exposes her to people and vehicles. She is followed by 40–50 wildlife photographers, has dedicated social media accounts, and has inspired several books.

18	Guy	A male western lowland gorilla and one of the most famous animals at the London Zoo until his death in 1978, Guy's popularity greatly increased visitation rates, due in part to his peculiar behavior and interactions with humans and other animals, which were perceived as being gentle. He was often featured on television and natural history shows.
19	Herman	A captive white sturgeon at the Sturgeon Viewing Interpretive Center in the Bonneville Hatchery, in Oregon, Herman is the oldest (79 years of age) and largest (>3 m in length) known captive sturgeon. He attracts considerable media coverage and helps raise awareness about sturgeon conservation.
20	Herschel	Herschel was a massive sea lion bull living in Shilshole Bay near Seattle, Washington, in the 1980s, and was the first known sea lion to venture into the lock system leading from the Bay into Lake Washington to predate on steelhead (<i>Oncorhynchus mykiss</i>). Herschel is both an icon of sea lion recovery after their extirpation in the 1930s (for oil and meat for local consumption and aphrodisiac products for Chinese markets) and an example of management conflicts over wildlife due to the impact of the recovery of sea lion populations on steelhead stocks. His popularity contributed to an amendment to the Marine Mammal Protection Act.
21	Ivy and Brumas	Famous female polar bears at the London Zoo, with Ivy giving birth to Brumas in 1949, the first successful birth of a polar bear in the UK. Their popularity attracted numerous visitors to the Zoo, and resulted in many newsreels, books, toys, and other merchandise.
22	Jumbo	A male African bush elephant born in Sudan, in 1860. Jumbo was kept in several zoos, including the Jardin des plants in Paris and the London Zoo, before being moved to the US, where he appeared in a circus and exhibitions. He was enormously popular in the US and UK, which led to a greatly increased awareness of elephants among the public.
23	Keiko	Keiko appeared as Willy in the 1993 movie <i>Free Willy</i> . Originally captured in the Atlantic Ocean near Iceland in 1979, Keiko spent time in captivity in Iceland, Canada, and Mexico, but experienced health problems while in captivity likely due to poor tank conditions. The Free Willy-Keiko Foundation was established in 1995 to bring him back to health, and called for his release back into the wild. Keiko was first transported to Oregon (in 1996) and then to Iceland (in 1998), from where he was released back into the wild in 2002. Unable to adapt to living in the wild, he died of suspected pneumonia in 2003 in Norway, at the age of ~27. Keiko became a flagship individual for animal welfare as well as cetacean conservation.

24	Knut	<p>“Rarely has an animal gained as much worldwide attention during its lifetime as the polar bear (<i>Ursus maritimus</i>) Knut, born 2006 in the Berlin Zoological Garden. Knut’s popularity resulted in the most profitable period in the Zoo’s 163-year history. In 2011 in front of running cameras, Knut drowned after he suffered epileptic seizures and fell into the enclosure’s pool” (Prüss <i>et al.</i> [2015]; see WebTable 4 for full citation). Knut and his twin brother, who died after just 4 days, were rejected at birth by their mother; he was then raised by zookeepers after a public debate over whether he should be euthanized. Due to his worldwide popularity, the term “Knutmania” was coined. He has Wikipedia articles in >40 languages, the bronze sculpture “Knut the dreamer” can now be seen at the Berlin Zoo, and his remains are on display in Berlin’s Natural History Museum. Images of Knut were used in a global environmental campaign in 2007, and he was the mascot for a 2008 conference on endangered species held in Bonn, Germany. In 2008, a special issue stamp featuring Knut was released to promote nature protection in Germany.</p>
25	Koko	<p>A female western lowland gorilla born at the San Francisco Zoo, Koko was probably the most well-documented individual non-human animal. World famous for being the first gorilla to communicate via a modified version of sign language, Koko inspired millions of people around the world to better understand the sensitive, caring, and intelligent nature of gorillas, and became an ambassador for her species through numerous articles, books, documentaries, news stories, public service announcements, websites, photographs, and film/video clips.</p>
26	Lonesome George	<p>A male Pinta Island tortoise, George was the last known individual of the subspecies. Popularized and widely considered to be the rarest animal in the world, George was a symbol of conservation efforts in the Galápagos Islands and around the globe.</p>
27	Lua	<p>The first captive-released Antillean manatee in Brazil, Lua played an important role in the creation and zoning of Costa dos Corais Marine Protected Area. She was also the first released Antillean manatee to reproduce in the wild, and became an important symbol of the success of the Brazilian conservation translocation program, being featured in local media and community activities to increase public awareness. Underwater photographers took advantage of her docile behavior to capture iconic photographs of her for use in national publicity campaigns, and many people had their first direct contact with wild manatees through Lua. Her habituation to humans also greatly facilitated the creation of a local sustainable tourism industry.</p>

28	Magnificent Seven tuskers	Seven male elephants native to Kruger National Park in South Africa were highlighted as a successful example of the Park's conservation work. Each individual was given a name – Dzombo, João, Kambaku, Mafunyane, Ndlulamithi, Shawu, and Shingwedzi – in addition to their collective name. The tuskers became highly popular tourist attractions as a result of numerous promotions that included merchandise and illustrated articles.
29	Martha	Martha gained renown as purportedly the last living passenger pigeon. Before she died at the Cincinnati Zoo she was already a celebrity and attracted many visitors, and has since become a symbol of extinction threat as well as an enduring icon of the conservation movement.
30	Mary Lee	A 1500-kg great white shark tagged as a part of a research project, Mary Lee was promoted as the flagship of the project. A Twitter account tracked her movements, and her popularity greatly contributed to improving the negative perceptions of sharks.
31	Ndakasi	An orphaned female mountain gorilla rescued by park rangers after poachers killed her family, Ndakasi rose to international fame following her appearance in a “selfie” photograph that became popular on the Internet. Following her death in 2021, obituaries were published in many global major news media, and her photos and life history were included in numerous media publications. She contributed to increased awareness about poaching and mountain gorilla conservation, and was featured in the documentary film <i>Virunga</i> , which focused on the efforts of rangers in Virunga National Park to protect mountain gorillas.
32	Ruthi	A female striped hyena who became popular in the Israeli city of Modi'in, where she was frequently encountered, Ruthi became a source of affection for many locals. Her popularity led to the establishment of dedicated social media accounts, news media coverage, works of art, and merchandise. Her popularity contributed to the development of an ecological corridor through central Israel, and to improved perceptions of the species.
33	Sam	A photograph of a firefighter giving Sam, a female koala, a drink during a large-scale bushfire in Australia received widespread media attention, and raised awareness of the threat of wildfires to biodiversity.
34	Sir Nils Olav	Brigadier Sir Nils Olav III, a king penguin at the Edinburgh Zoo, is a mascot and colonel-in-chief of the Norwegian King's Guard. The name and rank have been passed down from one individual to the next, with each new recipient assuming the identity after the death of the previous holder (the current penguin is the third incarnation of this character). Sir Nils Olav attracts considerable media attention in the UK and Norway, and raises awareness of the species and penguins in general.

35	Smokey Bear	Long an iconic symbol of the US Forest Service Wildfire Prevention Campaign, Smokey's real-life counterpart was a black bear cub that was rescued from a wildfire and raised at the National Zoo in Washington, DC. Smokey Bear is now featured in wildfire prevention campaigns throughout the US, and is known to generations of US hikers, campers, and travelers. The Smokey Bear Wildfire Prevention campaign is the longest-running public service advertising campaign in US history.
36	Sudan	Sudan was a captive northern white rhinoceros who, at the time of his death, was one of the last three living individuals and the sole remaining male of the subspecies. The plight of the subspecies attracted considerable attention worldwide and increased support for rhinoceros species.
37	Tilikum	A captive male orca kept at SeaWorld Orlando in Florida, Tilikum was featured in the documentary <i>Blackfish</i> , which received considerable public attention and contributed to increasing disapproval of the treatment of captive orcas and their use for entertainment purposes.
38	Wally	Along with Bavaria, Wally was the first bearded vulture to be released in Germany, as part of a reintroduction program. The two vultures were released in the summer of 2021 and have received frequent media coverage, although Wally died in May 2022 in the Bavarian Alps.
39	Winter	When just a few months old, Winter, a common bottlenose dolphin, became entangled in a crab trap in Florida in 2005. Although rescued and transferred to the Clearwater Marine Aquarium, she eventually lost her tail. Winter became the first dolphin to receive a prosthetic tail, which allowed her to swim normally and prevented further injury. She has attracted substantial media attention, as well as dedicated books and movies.
40	Wisdom	First banded in 1956, this 71-year-old Laysan albatross is still successfully breeding and raising chicks, making her the oldest known wild bird; she has become a symbol of both the longevity and resilience of this threatened species.

I Jarić *et al.* - Supporting Information

WebTable 3. Reported and potential flagship effects, conservation threats and issues addressed, and the level of available evidence supporting impacts of the flagship individuals presented in WebTable 1

	Name	Intended/manifested flagship effects	Conservation threats/issues addressed	Evidence of flagship effect available
1	480 Otis	Awareness, public support for protected area	Brown bear conservation, ecosystem health and protection	Strong (public and media attention, fundraising)
2	Alex	Awareness	Harm to wildlife, hunting	More evidence needed (media and public attention)
3	Bill and Lynn	Public support	Human–wildlife conflicts	More evidence needed (change of public attitudes)
4	Benjamin	Awareness	Hunting, habitat destruction	More evidence needed (media and public attention)
5	Bert	Awareness, public support, fundraising	Traffic accidents, human–wildlife conflicts	More evidence needed (media and public attention, change of public attitudes)
6	Bruno (JJ1)	Awareness	Human–wildlife conflicts	More evidence needed (media presence, resulting development of a management plan for brown bears in Bavaria)
7	Cecil	Awareness, public support, fundraising, policy change	Trophy hunting, lion conservation in general	More evidence needed (media presence, public attitudes, fundraising, adopted policies)
8	Chi Chi	Awareness, public support, fundraising	Panda conservation, conservation in general	More evidence needed (media and public attention, fundraising)
9	David Greybeard	Awareness, public support	Conservation of great apes	More evidence needed (media and public attention)
10	Dicke Marie	Awareness, public support	Forest protection	More evidence needed (media and public attention)
11	Diego	Awareness	Conservation of the subspecies, conservation breeding, threats to Galapagos wildlife	More evidence needed (media presence)
12	Elsa	Awareness, public support	Conservation of lions and African wildlife	Strong (dedicated books and movies, media and public attention, change of public attitudes)
13	Fernanda	Awareness, public support, fundraising	Habitat loss and fragmentation	Evidence needed
14	Flipper	Awareness, public support	Public support for dolphin and more generally cetacean protection	More evidence needed (great popularity of television shows and movies)
15	General Sherman	Awareness, public support, fundraising	Protected area, forest conservation	More evidence needed (visitation rates in the protected area, public awareness)
16	Grecia	Awareness, public support, policy change	Harm to wildlife	More evidence needed (media presence, public rallies, policy change)

17	Grizzly 399	Awareness	Conservation of the species and the Greater Yellowstone Ecosystem	More evidence needed (visitation rates in the protected area, media presence, public attention, dedicated books)
18	Guy	Awareness	Conservation of great apes	More evidence needed (media presence, and public awareness)
19	Herman	Awareness	Habitat loss and fragmentation, overfishing, sturgeon conservation	More evidence needed (media presence, and public awareness)
20	Herschel	Awareness, research funding, policy change	Overfishing, poor fishery management, habitat degradation and fragmentation, human–wildlife conflicts	More evidence needed (environmental activism, policy change)
21	Ivy and Brumas	Awareness	Conservation of the species	More evidence needed (media and public attention)
22	Jumbo	Awareness	Conservation of elephants	More evidence needed (public attention)
23	Keiko	Awareness, public support, fundraising, behavioral change	Harm to wildlife	Strong (animal welfare), more evidence needed (conservation, media presence and public attention)
24	Knut	Awareness, fundraising	Climate change, habitat loss	Strong (public and media attention, fundraising, effects of use as a mascot)
25	Koko	Awareness	Conservation of great apes	More evidence needed (media presence and public awareness)
26	Lonesome George	Awareness, public support	Conservation of Galapagos tortoises, Galapagos Islands generally	More evidence needed (media presence and public awareness)
27	Lua	Awareness, public support, fundraising	Habitat loss, hunting, manatee conservation	Strong (media and public attention, tourism initiative)
28	Magnificent Seven	Awareness, public support for protected area, fundraising	Poaching, elephant conservation	More evidence needed (visitation rates in the protected area, public awareness)
29	Martha	Awareness, public support	Hunting, species extinctions	More evidence needed (media and public attention, tourism initiative)
30	Mary Lee	Awareness, public support	Shark conservation, human–wildlife conflicts	More evidence needed (media and public attention, change of public attitudes)
31	Ndakasi	Awareness, public support	Poaching, mountain gorilla conservation	More evidence needed (media and public attention)
32	Ruthi	Awareness, public support, behavioral change	Green corridors, conservation of the species	More evidence needed (media and public attention)
33	Sam	Awareness	Harm to wildlife, habitat destruction	More evidence needed (international media coverage)
34	Sir Nils Olav	Awareness	Conservation of penguins	More evidence needed (media attention)
35	Smokey Bear	Awareness, public support, fundraising, behavioral change	Harm to wildlife, habitat destruction, public safety	Relatively strong (marked contribution to fire suppression in the US)

36	Sudan	Awareness, public support, fundraising	Poaching, rhinoceros conservation	More evidence needed (media and public attention)
37	Tilikum	Awareness, public support, activism, behavioral change	Harm to wildlife	Strong (public and media attention, activism)
38	Wally	Awareness, public support, fundraising	Habitat loss and fragmentation, bearded vulture population recovery	More evidence needed (media presence), probably going to become stronger over time
39	Winter	Awareness, public support	Harm to wildlife (fish nets, crab traps, other hazards to marine wildlife)	More evidence needed (media attention, dedicated books and movies)
40	Wisdom	Awareness	Albatross population recovery	More evidence needed (media attention)

I Jarić *et al.* - Supporting Information

WebTable 4. Scale of flagship effects, presence of the four defining characteristics (0 = absent, 1 = present) and references on reported and potential flagship individuals presented in WebTable 1

	Name	Scale of effects	Four defining characteristics of flagship individuals (see text for clarification)				References
			(1) <i>Charismatic species</i>	(2) <i>Individual charismatic traits</i>	(3) <i>Exposure to humans</i>	(4) <i>Individual fate</i>	
1	480 Otis	Local	1	1	1	0	Chappell (2021b)
2	Alex	Global	1	0	1	1	Alex Foundation (2022)
3	Bill and Lynn	Local	1	0	1	0	
4	Benjamin	Local, global	1	0	0	1	Brewster (2020); NMA (2022)
5	Bert	Local	1	1	1	0	Gandl (2020)
6	Bruno (JJ1)	Local	1	0	1	1	Fischer and Neukirch (2010)
7	Cecil	Global	1	1	1	1	Wheaton (2015); Macdonald <i>et al.</i> (2016); Carpenter and Konisky (2019)
8	Chi Chi	Local, global	1	1	1	0	Barua (2020)
9	David Greybeard	Global	1	1	0	0	Roet (2020)
10	Dicke Marie	Local	0	1	1	0	Gomolka (2017)
11	Diego	Global	1	0	0	1	Cayot (2021); Moore (2021)
12	Elsa	Global	1	0	1	1	Duve and Völker (1997); Beinart (2007)
13	Fernanda	Local, global	1	0	0	1	Jensen <i>et al.</i> (2022)
14	Flipper	Global	1	0	1	0	Duve and Völker (1997)
15	General Sherman	Local	1	1	1	0	

16	Grecia	Local	1	0	1	1	Kahn (2016)
17	Grizzly 399	Local	1	1	1	0	Gunther <i>et al.</i> (2015)
18	Guy	Local	1	1	1	0	Pouillard (2020)
19	Herman	Local	1	1	1	0	ODFW (2017)
20	Herschel	Local	1	1	1	0	Gammon (2018)
21	Ivy and Brumas	Local	1	0	1	0	Jukes (2016)
22	Jumbo	Local, global	1	1	1	0	Duve and Völker (1997)
23	Keiko	Global	1	0	1	1	Duve and Völker (1997); Orlean (2002)
24	Knut	Local, global	1	0	1	1	Prüss <i>et al.</i> (2015)
25	Koko	Global	1	1	0	0	Gold and Watson (2018)
26	Lonesome George	Global	1	0	0	1	Nicholls (2006)
27	Lua	Local	1	0	1	0	Lima <i>et al.</i> (2005); Normande <i>et al.</i> (2015, 2016)
28	Magnificent Seven	Local, global	1	1	1	0	SANParks (2022)
29	Martha	Global	1	0	1	1	Avery (2014)
30	Mary Lee	Global	1	0	1	0	Tibbetts (2017)
31	Ndakasi	Global	1	1	0	1	Stirton (2021)
32	Ruthi	Local	1	0	1	0	INPA (2019)
33	Sam	Local, global	1	0	1	1	Due <i>et al.</i> (2014); Carland (2017)
34	Sir Nils Olav	Local	1	0	1	1	
35	Smokey Bear	Local	1	0	0	1	Smith (1956)

36	Sudan	Global	1	0	0	1	Fink <i>et al.</i> (2020)
37	Tilikum	Local, global	1	0	1	1	Boissat <i>et al.</i> (2021)
38	Wally	Local	1	0	0	1	Sebald (2022)
39	Winter	Local, global	1	0	1	1	Anthes (2013)
40	Wisdom	Local, global	1	1	0	0	Chappell (2021a)

WebReferences

Alex Foundation. 2022. <https://alexfoundation.org>. Viewed 29 Dec 2022.

Anthes E. 2013. A dolphin's tale. *Sci Am* **308**: 78–81.

Avery M. 2014. A message from Martha: the extinction of the passenger pigeon and its relevance today. London, UK: A&C Black.

Barua M. 2020. Affective economies, pandas, and the atmospheric politics of lively capital. *TI Brit Geogr* **45**: 678–92.

Beinart W. 2007. The lion queen. *Environ Hist-UK* **12**: 283–86.

Boissat L, Thomas-Walters L, and Veríssimo D. 2021. Nature documentaries as catalysts for change: mapping out the “Blackfish effect”. *People and Nature* **3**: 1179–92.

Brewster S. 2020. Remembrance Day for lost species: toward an ethics of witnessing extinction. *Perform Res* **25**: 95–101.

Carland R. 2017. Sam the koala. Melbourne, Australia: Museums Victoria.

Carpenter S and Konisky DM. 2019. The killing of Cecil the Lion as an impetus for policy change. *Oryx* **53**: 698–706.

Cayot LJ. 2021. Española Island: from near extinction to recovery. In: Gibbs JP, Cayot LJ, and Tapia Aguilera W (Eds). Galapagos giant tortoises. Cambridge, MA: Academic Press.

Chappell B. 2021a. Wisdom the albatross, now 70, hatches yet another chick. *National Public Radio*; Mar 5, 2021. www.npr.org/2021/03/05/973992408/wisdom-the-albatross-now-70-hatches-yet-another-chick. Viewed 29 Dec 2022.

Chappell B. 2021b. Fat Bear Week has a champion: all hail 480 Otis. *National Public Radio*; Oct 6, 2021. www.npr.org/2021/10/06/1043647458/fat-bear-week-champion-480-otis. Viewed 29 Dec 2022.

Due C, Thompson K, and Every D. 2014. An image of hope in a week of despair: representations of Sam the koala in the Australian mainstream news media. *Media Int Aust* **151**: 47–55.

Duve K and Völker T. 1997. Lexikon berühmter tiere: 1200 tiere aus geschichte, film, märchen, literatur und mythologie. Frankfurt, Germany: Eichborn Verlag.

- Fink C, Hausmann A, and Di Minin E. 2020. Online sentiment towards iconic species. *Biol Conserv* **241**: 108289.
- Fischer S and Neukirch R. 2010. Nature is good, as long as it is controlled: US diplomats analyzed death of Bruno the bear. *Spiegel International*; Dec 3, 2010. www.spiegel.de/international/germany/nature-is-good-as-long-as-it-is-controlled-us-diplomats-analyzed-death-of-bruno-the-bear-a-732532.html. Viewed 29 Dec 2022.
- Gammon K. 2018. Herschel, the very hungry sea lion. *Hakai Magazine*; Oct 16, 2018. <https://hakaimagazine.com/features/herschel-the-very-hungry-sea-lion/>. Viewed 29 Dec 2022.
- Gandl N. 2020. Der elch ist zurück in Deutschland. Berlin, Germany: WWF Germany.
- Gold KC and Watson LM. 2018. In memorium: Koko, a remarkable gorilla. *Am J Primatol* **80**: e22930.
- Gomolka A. 2017. “Dicke Marie” (Berlin-Tegel). *Nationalerbe-Baum*; <https://nationalerbe-baeume.de/project/dicke-marie-berlin-tegel/>. Viewed 29 Dec 2022.
- Gunther KA, Wilmot KR, Cain SL, *et al.* 2015. Habituated grizzly bears: a natural response to increasing visitation in Yellowstone & Grand Teton National Parks. *Yellowstone Science* **23**: 32–40.
- INPA (Israel Nature and Parks Authority). 2019. Striped: hyena and the big city. Jerusalem, Israel: INPA.
- Jensen EL, Gaughran SJ, Fusco NA, *et al.* 2022. The Galapagos giant tortoise *Chelonoidis phantasticus* is not extinct. *Communications Biology* **5**: 546.
- Jukes E. 2016. Review of menageries in Britain 1100–2000. *Reference Reviews* **30**: 36–37.
- Kahn C. 2016. After losing half a beak, Grecia the toucan becomes a symbol against abuse. *National Public Radio*; Aug 27, 2016. www.npr.org/sections/parallels/2016/08/27/491372643/after-losing-half-a-beak-grecia-the-toucan-becomes-a-symbol-against-abuse?t=1634838205469. Viewed 29 Dec 2022.
- Lima RP, Alvite CM, Vergara-Parente JE, *et al.* 2005. Reproductive behavior in a captive-released manatee (*Trichechus manatus manatus*) along the northeastern coast of Brazil and the life history of her first calf born in the wild. *Aquat Mamm* **31**: 420–26.
- Macdonald DW, Jacobsen KS, Burnham D, *et al.* 2016. Cecil: a moment or a movement? Analysis of media coverage of the death of a lion, *Panthera leo*. *Animals* **6**: 26.
- Moore R. 2021. Galápagos: an encyclopedia of geography, history, and culture. Santa Barbara, CA: ABC-CLIO.
- Nicholls H. 2006. Lonesome George: the life and loves of a conservation icon. New York, NY: Macmillan Science.
- NMA (National Museum Australia). 2022. Extinction of thylacine. Canberra, Australia: NMA.
- Normande IC, Luna FDO, Malhado ACM, *et al.* 2015. Eighteen years of Antillean manatee *Trichechus manatus manatus* releases in Brazil: lessons learnt. *Oryx* **49**: 338–44.

- Normande IC, Malhado ACM, Reid J, *et al.* 2016. Post-release monitoring of Antillean manatees: an assessment of the Brazilian rehabilitation and release programme. *Anim Conserv* **19**: 235–46.
- ODFW (Oregon Department of Fish & Wildlife). 2017. Herman the sturgeon. Salem, OR: ODFW.
- Orlean S. 2002. Where's Willy? *The New Yorker*; Sep 15, 2002. www.newyorker.com/magazine/2002/09/23/wheres-willy. Viewed 29 Dec 2022.
- Pouillard V. 2020. Structures of captivity and animal agency: the London Zoo, ca 1865 to the present times. In: Mengozzi C (Ed). *Outside the anthropological machine: crossing the human–animal divide and other exit strategies*. Abingdon-on-Thames, UK: Routledge.
- Prüss H, Leubner J, Wenke NK, *et al.* 2015. Anti-NMDA receptor encephalitis in the polar bear (*Ursus maritimus*) Knut. *Sci Rep-UK* **5**: 12805.
- Roet L. 2020. David Greybeard. www.davidgreybeard.com/. Viewed 29 Dec 2002.
- SANParks (South African National Parks). 2022. The Magnificent Seven. Pretoria, South Africa: SANParks.
- Sebald C. 2022. Wally und Bavaria sind beliebt wie popstars. *Süddeutsche Zeitung*; Jan 2, 2022; www.sueddeutsche.de/bayern/bayern-bartgeier-naturschutz-artenvielfalt-1.5499580. Viewed Dec 29 2022.
- Smith JM. 1956. The story of Smokey Bear. *Forest Chron* **32**: 183–88.
- Stirton B. 2021. Remembering Ndakasi, a beloved mountain gorilla. *National Geographic*; Oct 8, 2021. www.nationalgeographic.com/animals/article/remembering-ndakasi-beloved-mountain-gorilla. Viewed 29 Dec 2022.
- Tibbetts JH. 2017. Making moves. *BioScience* **67**: 7–13.
- Wheaton O. 2015. Cecil the lion “died for a reason”, and has seen thousands raised for charity. *Metro*; Dec 26, 2015; <https://metro.co.uk/2015/12/26/cecil-the-lion-died-for-a-reason-and-has-seen-thousands-raised-for-charity-5585885/>. Viewed 29 Dec 2022.

WebTable 5. Glossary

Term	Definition
Conservation marketing	Ethical application of marketing strategies, concepts, and techniques to influence attitudes, perceptions, and behaviors of individuals, and ultimately societies, with the objective of advancing conservation goals (Wright <i>et al.</i> 2015)
Flagship fleet	Use of several flagship species in a single conservation marketing campaign (Veríssimo <i>et al.</i> 2014)
Flagship individual	Organism whose individual traits, species characteristics, exposure to humans, and/or fate engage and motivate people, and garner support for conservation goals
Flagship species	A species used as the focus of a broader conservation marketing campaign based on its possession of one or more traits that appeal to the target audience (Veríssimo <i>et al.</i> 2011)
Focusing events	Sudden, relatively uncommon attention-grabbing events, which often concentrate attention on previously dormant issues (Birkland 1998)
Identifiable victim effect	Tendency of people to donate more to appeals featuring particularly needy individuals (Deshpande and Spears 2016)
Virtual influencer	Individual based on computer-generated imagery or artificial intelligence with a substantial number of online followers (often on social media) who promotes products and brands (Veríssimo 2021)

WebReferences

- Birkland TA. 1998. Focusing events, mobilization, and agenda setting. *J Public Policy* **18**: 53–74.
- Deshpande A and Spears D. 2016. Who is the identifiable victim? Caste and charitable giving in modern India. *Econ Dev Cult Change* **64**: 299–321.
- Veríssimo D, Fraser I, Girão W, *et al.* 2014. Evaluating conservation flagships and flagship fleets. *Conserv Lett* **7**: 263–70.
- Veríssimo D, MacMillan DC, and Smith RJ. 2011. Toward a systematic approach for identifying conservation flagships. *Conserv Lett* **4**: 1–8.
- Veríssimo D. 2021. Trends in digital marketing for biodiversity conservation. *Revista CEA* **7**: e1957.
- Wright AJ, Veríssimo D, Pilfold K, *et al.* 2015. Competitive outreach in the 21st century: why we need conservation marketing. *Ocean Coast Manage* **115**: 41–48.